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<b>NEW SCHEME</b>
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**Sixth Semester B.E. Degree Examination, Dec. 06 / Jan. 07**  
**Electrical and Electronics Engineering**  
**Electrical Drawing and CAD**

Time: 3 hrs.]

[Max. Marks:100

**Note: 1. Answer any FOUR questions form PART A and ONE question from PART B.**

**PART A**

- 1
  - a. Draw single line diagram to show the arrangement of all equipment in a thermal power plant. (08 Marks)
  - b. Draw a neat single line diagram using standard symbols for a 110 kV / 11 kV with following details:
    - i) 110 kV incoming lines – 2 numbers
    - ii) Line OCB's 110 kV – 2 numbers
    - iii) Transformers step down 110 kV /11 kV – 2 numbers
    - iv) L.T. OCB's for transformers – 2 numbers
    - v) Duplicate bus bars on H.T. and L.T. sides to be indicated
    - vi) Bus coupler on H.T. side only
    - vii) Feeders 11 kV at L.T. bus – 6 numbers
    - viii) L.T. circuit breakers for feeders – 6 numbers
    - ix) In appropriate positions indicate L.A. isolators PT's and CT's
    - x) Earthing switches at incoming lines – 2 numbers
    - xi) Wave traps at incoming lines – 2 numbers
    - xii) Coupling condenser [c.c] at incoming lines 2 numbers
    - xiii) Station supply transformers 11 kV / 415 V to be shown at LT side. (12 Marks)
  
- 2 Design and draw a duplex progressive, lap winding diagram of a DC generator with 32 conductors and 4 poles. Show direction of motion of armature direction of induced emf brush positions. Draw sequence diagram. (20 Marks)
  
- 3 Draw the developed winding diagram for an AC three phase rotating machine with following details:
  - Poles – 4
  - Slots – 36 each slot contain one coil side
  - Lap winding
  - Full pitched
  - Star connected, bring out the terminals as A B C and N. (20 Marks)

- 4 Draw the front elevation left half in section, sectional plan and end view of a transformer with the dimensions given below. Scale  $\frac{1}{2}$  full size.
- Single phase core type 15 kVA, 50 Hz distribution type transformer
  - Cross section of core = 63 mm X 91.6 mm
  - Window = 298.5 mm X 114.5 mm
  - Yoke height = 63.5 mm
  - LT windings section of conductor = 2.79 mm X 10.6 mm one coil per leg
  - HV windings, cross section of wire = 2.59 mm diameter
  - Air space around core = 1.66 mm
  - Insulation between core and LT = 1.6 mm
  - Insulation on HT = 3 mm
  - Insulation at the top and bottom of winding
  - Insulation between layer = 0.35 mm
  - Provide 10 mm bolt with sleeve at suitable spacing. (20 Marks)
- 5 Draw to suitable scale i) End view and ii) Longitudinal view. Both top half in section for a DC machine.
- Yoke details: outer diameter – 49.6 cm  
inner diameter – 40 cm  
length diameter – 16 cm.
- Details of a main pole: number – 4  
width – 6.08 cm  
height – 12.8 cm  
air gap length – 1.6 mm
- Inter pole details: number – 4  
width – 9.5 cm  
height – 11 cm  
air gap – 2.5 mm (20 Marks)
- 6 A yoke of a squirrel cage induction motor is made of cast iron. The stator core is fixed to the yoke by dovetail joint between the rectangular type ventilating holes. The rotor is directly mounted over the shaft. There is rectangular type ventilating hole above the shaft in the rotor core in each quadrant. The shaft is supported by end shield bearing. With suitable proportional dimensions draw the top sectional end view of above assembly. (20 Marks)

### PART B

- 7 a. Explain different options available for drawing a line. (05 Marks)  
b. Explain the following commands:  
i) Trim ii) Extend iii) Offset iv) Mirror v) Move. (15 Marks)
- 8 a. Explain different options available for drawing a circle. (05 Marks)  
b. Explain the following commands:  
i) Array ii) Rotate iii) Hatch iv) Fillet v) Pan. (15 Marks)